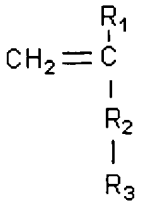
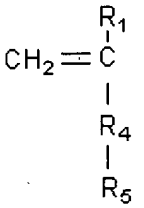
WHAT IS CLAIMED IS:

1. A monomer for a chemically amplified negative photoresist, which is represented by the formula 1 or 2:



(1)



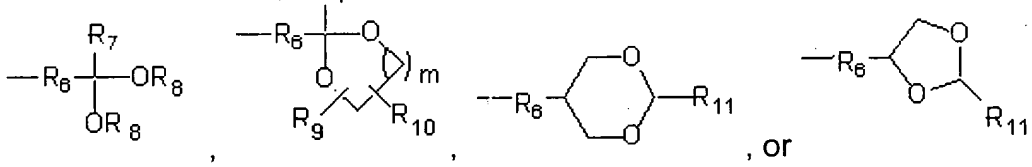
(2)

wherein:

R_1 is H or CH_3;

R_2 and R_4 are each independently selected from $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

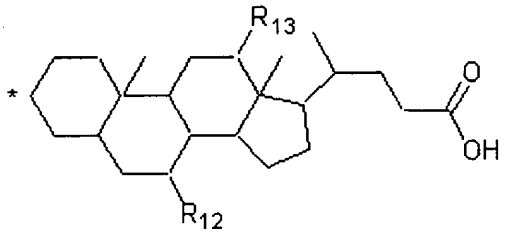
R_3 is represented by one of the formula:



, or

wherein R_6, which combines an acetal compound and a vinyl compound, is a C_1-C_5 saturated alkyl, a C_1-C_5 ether, or a C_1-C_5 carbonyl; R_3 to R_7 are each independently selected from H, C_1-C_5 saturated alkyls, C_1-C_5 ethers, C_1-C_5 carbonyl groups, and C_1-C_5 alcohol groups; and m is a number ranging from 1-5; and

R_5 is represented by the formula:



wherein R_{12} and R_{13} are identical or each independently H or OH; and

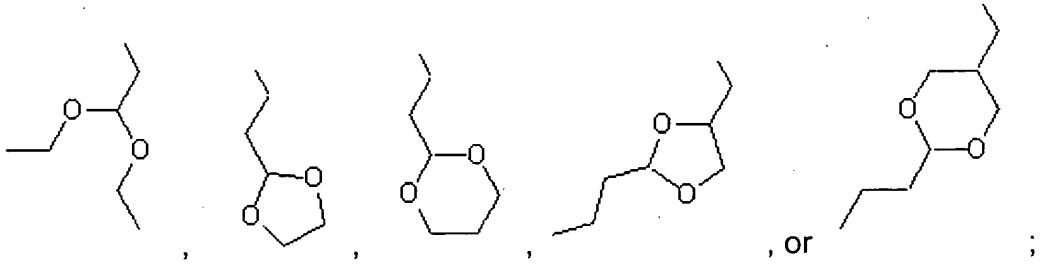
* represents the bonding site at which the R_4 group is bonded.

2. The monomer for a chemically amplified negative photoresist according to claim 1 wherein:

R_1 is H;

R_2 is CO_2;

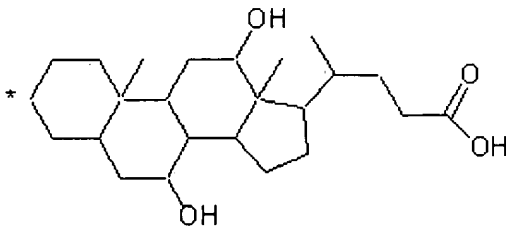
R_3 is



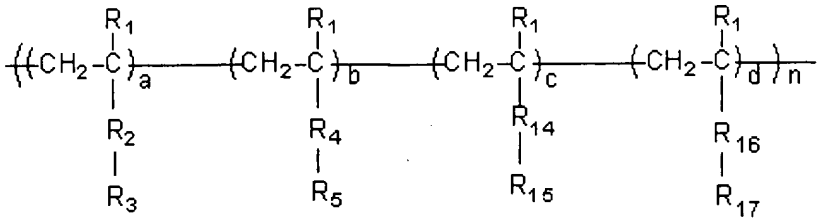
;

R_4 is CO_2; and

R_5 is



3. A polymer for a chemically amplified negative photoresist, which is represented by formula 5:

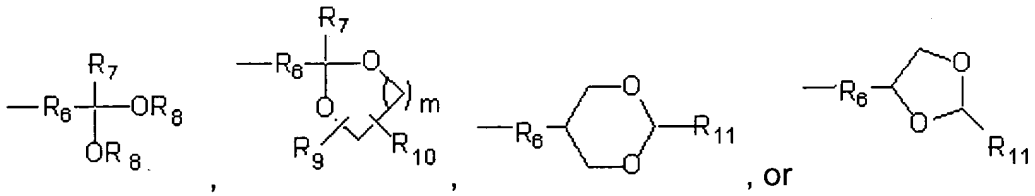


(5)

wherein R_1 is H or CH_3;

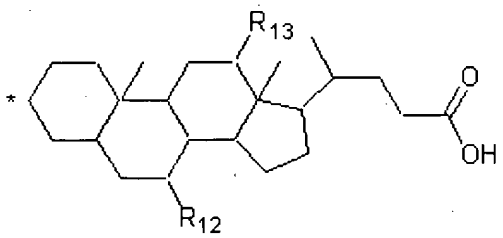
R_2 and R_4 are each independently selected from $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein, R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

R_3 is represented by one of the formula:



wherein R_6, which combines an acetal compound and a vinyl compound, is a C_1-C_5 saturated alkyl, a C_1-C_5 ether, or a C_1-C_5 carbonyl; R_7 to R_{11} are each independently selected from H, C_1-C_5 saturated alkyls, C_1-C_5 ethers, C_1-C_5 carbonyl groups, C_1-C_5 alcohol groups; and m is a number ranging from 1-5; and

R_5 is represented by formula:



wherein R_{12} and R_{13} are each independently selected from H and OH, and

* represents the bonding site at which the R_4 group is bonded;

R_{14} and R_{16} are each independently selected from a single bond, $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5); R_{15} is a hydroxyl group; R_{17} is a carboxyl group;

a, b, c, and d represent mole ratios of each monomer, a has a value of 0-0.5, b has a value of 0-0.9, c has a value of 0-0.3, and d has a value of 0-0.3, provided that a+b+c+d = 1; and

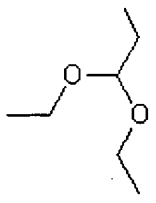
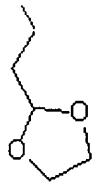
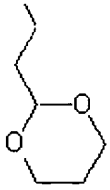
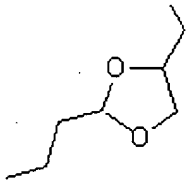
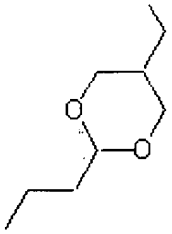
n represents the degree of polymerization of each polymer, and has a value of at least 2.

4. The polymer for a chemically amplified negative photoresist according to claim 3 wherein:

R_1 is H;

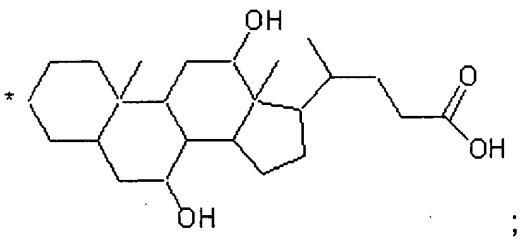
R_2 is CO_2;

R_3 is


, 
, 
, 
, or 
;

R_4 is CO_2;

R_5 is



;

R_{14} is $CO_2CH_2CH_2$,

R_{15} is OH,

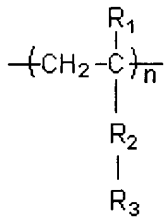
R_{16} is a single bond, and

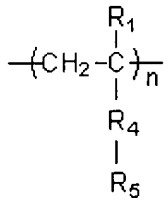
R_{17} is COOH.

5. A chemically amplified negative photoresist composition comprising:

a photoacid generator; and

a homopolymer of the formula 6, a homopolymer of the formula 7, or a combination thereof;

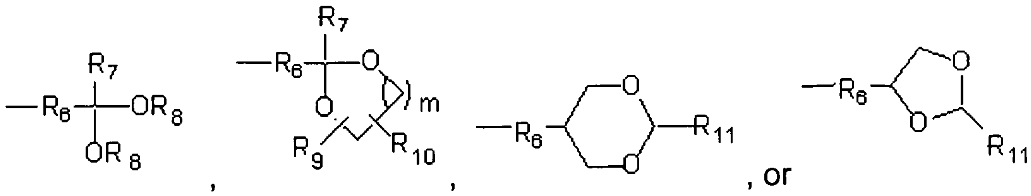

(6)


(7)

wherein R_1 is H or CH_3;

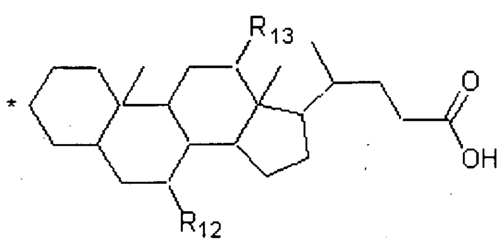
R_2 and R_4 are each independently selected from $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

R_3 is represented by one of the formula:



wherein R_6, which combines an acetal compound and a vinyl compound, is a C_1-C_5 saturated alkyl, a C_1-C_5 ether, or a C_1-C_5 carbonyl; R_7 to R_{11} are each independently selected from H, C_1-C_5 saturated alkyls, C_1-C_5 ethers, C_1-C_5 carbonyl groups, and C_1-C_5 alcohol groups; and m is a number ranging from 1-5; and

R_5 is represented by the formula:



wherein R_{12} and R_{13} are each independently H or OH;

* represents the bonding site at which the R_4 group is bonded; and

n represents the degree of polymerization of each polymer, and has a value of at least 2.

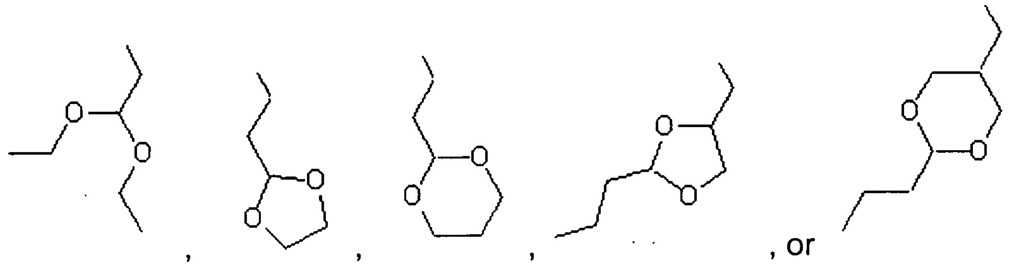
6. The chemically amplified negative photoresist composition according to claim 5 wherein the photoresist composition comprises a combination of the homopolymer of the formula 6 and the homopolymer of the formula 7.

7. The composition for a chemically amplified negative photoresist according to claim 5 wherein:

R_1 is H;

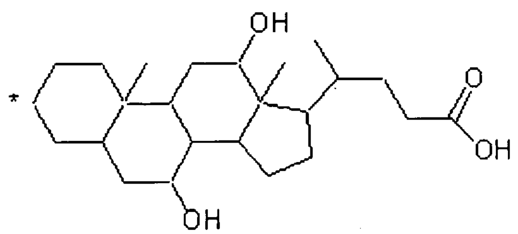
R_2 is CO_2;

R_3 is



R_4 is CO_2;

R_5 is



R_{14} is $CO_2CH_2CH_2$,

R_{15} is OH,

R_{16} is a single bond, and

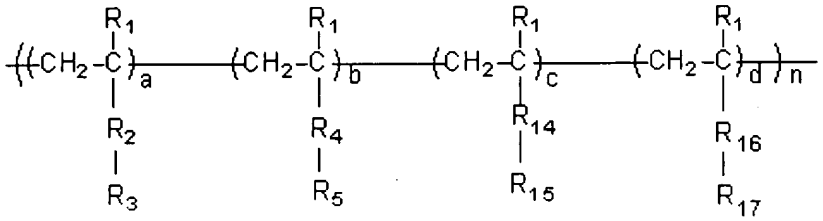
R_{17} is COOH.

8. The chemically amplified negative photoresist composition according to claim 5 wherein the photoresist composition comprises 10 to 20 wt.% of the polymer and 0.1 to 1.0 wt.% of the photoacid generator based on the weight of the photoresist.

9. A chemically amplified negative photoresist composition comprising;

a photoacid generator; and

a polymer of formula 5:

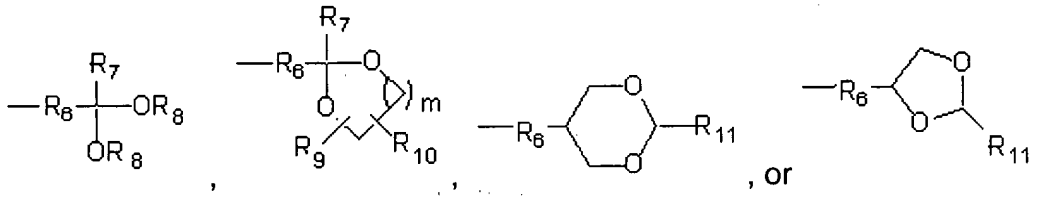


(5)

wherein R_1 is H or CH_3;

R_2 and R_4 are each independently selected from $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein, R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

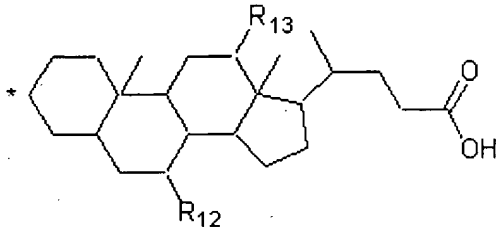
R_3 is represented by one of the formula:



, or

wherein R_6, which combines an acetal compound and a vinyl compound, is a C_1-C_5 saturated alkyl, a C_1-C_5 ether, or a C_1-C_5 carbonyl; R_7 to R_{11} are each independently selected from H, C_1-C_5 saturated alkyls, C_1-C_5 ethers, C_1-C_5 carbonyl groups, and C_1-C_5 alcohol groups; and m is a number ranging from 1-5; and

R_5 is represented by the formula:



wherein R_{12} and R_{13} are each independently H or OH; and

* represents the bonding site at which the R_4 group is bonded;

R_{14} and R_{16} are each independently selected from a single bond, $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein R is CO, CO_2, O, OCO, or OCO_2, R' is O, CO_2, or OCO_2, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5); R_{15} is a hydroxyl group; R_{17} is a carboxyl group;

a, b, c, and d represent the mole ratios of each monomer, wherein a has a value of 0-0.5, b has a value of 0-0.9, c has a value of 0-0.3, and d has a value of 0-0.3, provided that a+b+c+d = 1; and

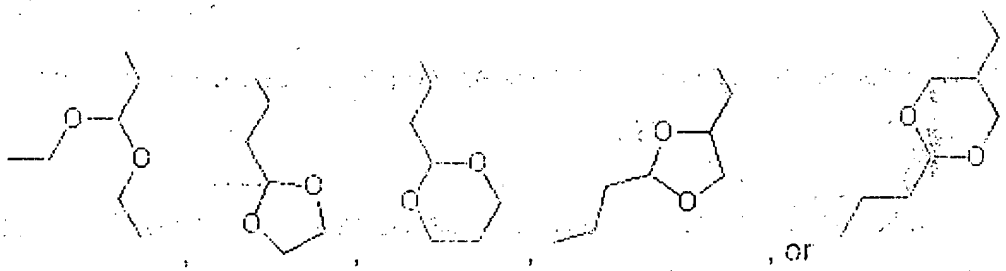
n represents the degree of polymerization of each polymer, and has a value of at least 2.

10. The chemically amplified negative photoresist composition according to claim 9 wherein

R_1 is H;

R_2 is CO_2;

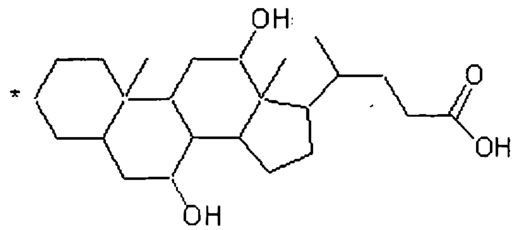
R_3 is



, or

R_4 is CO_2;

R_5 is



,

R_{14} is $CO_2CH_2CH_2$,

R_{15} is OH,

R_{16} is a single bond, and

R_{17} is COOH.

11. The chemically amplified negative photoresist composition according to claim 9 wherein the photoresist composition comprises 10 to 20 wt.% of said polymer and 0.1 to 1.0 wt.% of said photoacid generator.